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Biotechnology Notes

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Biotechnology Notes, a compilation of agency activities, news events, and upcoming meetings, is prepared for members of the U.S. Department of Agriculture's (USDA) Committee on Biotechnology in Agriculture (CBA) by USDA's Office of Agricultural Biotechnology (OAB).

INSIDE USDA

TAKING THE BITE OUT OF GYPSY MOTHS

When gypsy moth caterpillars come to dinner, don't count on any leftovers. In the early 1980's, they went on an eating binge that left tens of millions of oak and maple trees in the northeastern part of the country seriously defoliated. But now, with a little help from biotechnology, their binges may soon be over and an alternative found to chemical spraying. //

Gypsy moths carry a lethal but slow-acting virus. Scientists at the Forest Service's Northeastern Forest Station, Forestry Sciences Laboratory, in Delaware, Ohio, believe that biotechnology can be used to improve the virus and cause death or sterility in a shorter time span.

While one team has concentrated on learning more about the virus, another has been examining the insect's complex hormone system. Using monoclonal antibodies, they have identified and quantified the viral genes. The mystery behind virus replication has been solved through molecular studies of the virus genome. Work still needs to be done to identify particular hormone modulators.

Once all of the pieces of the puzzle are in place, the researchers hope to use recombinant DNA to attach the modulator to the virus. The virus would carry the modulator into the insect's hormone system and send messages to stop further growth and development. The young larvae would be especially vulnerable to the virus and either die or fail to grow and reproduce.

NEW SWINE STUDY UNDERWAY

The Economic Research Service (ERS) and the University of Minnesota signed a cooperative agreement to look at a set of technological and structural changes affecting the swine industry. One area being studied is the impact of porcine growth hormone (PGH), a protein that increases the efficiency of feed and reduces the fat content of pork, on grain markets and consumer consumption. Another is the changing production relationships between slaughterhouses and producers. The initial results of the study are due October 1989.

BIOTECH FUNDING FOR FY '89

Congress has appropriated \$19,016,000 for competitive research grants in biotechnology for fiscal year 1989, almost half of the total grant budget that is administered by the Competitive Research Grants Office of the Cooperative State Research Service (CSRS), and the same amount that was allocated last fiscal year.

The major areas of research to be funded under biotechnology include molecular genetics, growth and development, and responses to biological and physical stress in organisms of agricultural importance. For more information about applying for a grant and application deadlines, call USDA at (202) 475-5049.

PARLEZ-VOUS BIOTECHNOLOGY?

The Office of Agricultural Biotechnology (OAB) recently held briefings on agricultural biotechnology for seven French agricultural farm editors and five distinguished scientists from Saudi Arabia, Kuwait, Iraq, The United Arab Emirates, and Qatar. Members of the OAB staff covered the following topics:

- An overview of biotechnology programs at USDA (Dan Jones, OAB Deputy Director)
- Biosafety research (David MacKenzie)
- International programs (Martha Steinbock)
- Public outreach activities (Marti Asner)
- Regulations (Althaea Langston)
- Economic issues (Fred Kuchler)

The French editors were invited by Monsanto Co. to the United States to further their understanding of agricultural biotechnology. Their agenda included stops at the Animal and Plant Health Inspection Service's (APHIS) offices in Hyattsville, Md. and the Agricultural Research Service's (ARS) facilities in Beltsville, Md. A visit to Wisconsin dairy farms was also scheduled.

The Near Eastern visitors were sponsored by the U.S. Information Agency in cooperation with the Arab Bureau of Education for the Gulf States. Their tour of the United States included a visit with researchers at the University of California.

OAB AND PURDUE UNIVERSITY SIGN COOPERATIVE AGREEMENT

The OAB and Purdue University have agreed to cooperate on a three-part action plan to help biotechnologists recognize and deal effectively with the socio-economic aspects of biotechnology. The first part of the plan focuses on identifying and assigning priorities to economic research issues. This process will lead to developing research initiatives.

The second part of the action plan will provide educational information for various audiences through a series of leaflets on: the background of biotechnology, ethics and values, production agriculture and rural communities, food and non-food uses of agricultural products, food safety and quality, environmental risks and benefits, guidelines and regulations, intellectual property issues, international issues, and the effects of biotechnology on the future of agriculture.

The last part of the plan will synthesize information from numerous studies, surveys, and opinion polls on the public's perceptions of biotechnology. The overview should be useful to the scientific community as well as to public administrators.

TWO "DETAILEES" JOIN OAB

Bert Wenner and Maryln Cordle each began temporary, four-month assignments to OAB. Wenner, a social/environmental impact analyst with the Forest Service, will work on the environmental aspects of outdoor field testing. Cordle, an expert on the regulation of residues in foods, will analyze regulatory issues and serve as OAB liaison with the Food and Drug Administration and the Environmental Protection Agency.

Wenner and Cordle replace outgoing detailees Fred Kuchler and Althaea Langston. Kuchler, an agricultural economist, returned to the ERS. Langston resumed her duties at APHIS.

IN CASE YOU WEREN'T THERE

- The first plant biotechnology laboratory designed for continuous public viewing was dedicated on Oct. 7 at EPCOT Center in Disney World, Buena Vista, Fla. The exhibit was jointly sponsored by Kraft, Inc., The Walt Disney Company, and USDA.

The 500-square foot working laboratory is in "The Land" pavilion and allows the public to see scientists working on ways to improve crop resistance to different environmental stresses. More than \$200,000 worth of equipment was loaned by USDA's ARS, including a laminar flow hood, microscopes, shaker tables, a revolving clinostat; test tubes; and video cameras.

Secretary Lyng unveiled the exhibit at the opening ceremony, noting "the tremendous advancements that have been made through agricultural science." He also said that he was "convinced that our nation's researchers are capable of unlocking many of the remaining mysteries of plant science -- so that no one on this planet will ever need to fear that the world's farmers cannot produce enough food for survival."

Following the press conference, about 30 media representatives were invited to a special symposium on plant biotechnology. The panel of experts, including OAB Director Dr. Alvin Young, each gave a presentation and then answered questions from the media.

- "Veterinary Perspectives on Genetically Engineered Animals", a conference held in Washington, D.C., Sept. 19-20, drew about 150 veterinarians and policymakers. Dr. Ed-

win Andres, Dean of the School of Veterinary Medicine at the University of Pennsylvania, said genetic engineering is "a technology that promises to merge the barnyard and the laboratory. . ." Topics covered at the meeting included animal models of human disease, gene therapy, molecular farming, animal production, animal welfare, and public policy concerns.

o Scientific highlights from fiscal year 1988 was a major topic of discussion at the last meeting of CSRS's Science and Education Competitive Research Grants Office (CRGO) Advisory Committee, held Sept. 30 in Washington, D.C. Total available funds for grants was slightly over \$40 million; \$22.7 million was earmarked for basic biotechnology research. In addition, the USDA, the Department of Energy, and the National Science Foundation funded three plant science centers (Michigan State University, Arizona State University, Cornell University) for the next five years in the amount of \$9.5 million.

The committee cited the following examples of important biotechnology research projects funded by CRGO:

(1) Development of a new analogue of a neurotransmitter in insects. Such an analogue could serve as a new kind of insecticide. (Massachusetts General Hospital, Boston, Mass.)

(2) Basic studies on the mechanisms of race non-specific resistance to bean rust disease. (Cornell University, New York.)

(3) Mapping, isolation, and characterization of wheat genes that confer salt tolerance. (University of California, Davis.)

(4) Investigation on how cell walls are assembled in plant cells (Washington University, St. Louis, Missouri.)

(5) Molecular cloning of genes involved in the cellulose digestion process in ruminants. (Cornell University, New York.)

(6) Molecular manipulation of the bovine casein gene (protein in milk) to eventually produce a transgenic cow whose milk would include valuable proteins instead of the casein. The CRGO-funded part of the project investigates the regulatory mechanism for the casein gene expression. (Baylor College of Medicine, Houston, Texas.)

NEW PUBLICATIONS AND SERVICES

The North Carolina Biotechnology Center maintains five databases on commercial biotechnology and will do searches for the public on a cost-recovery basis. For more information, contact the Center at 919-541-9366.

"Microbes and Cells at Work", published by the American Type Culture Collection. This 232-page index to microbes includes algae, bacteria, cell lines and hybridomas, fungi,

protoza, viruses, and yeasts. All indexed strains may be ordered. The book costs \$40. Information on ordering may be obtained by calling the Collection at (301) 881-2600.

Biotechnology Guide USA: Companies, Data and Analysis. 352 pages. Stockton Press, New York, July 1988. Stock #0079. Cost: \$175. Call (212) 481-1334 to order.

Biotechnology and the Environment: A Primer on the Environmental Implications of Genetic Engineering, by Margaret Mellon, National Wildlife Federation. Washington, D.C., 1988. \$15. ISBN 0-912186-99-2.

The following three publications can be obtained through Iowa State University's Technology and Social Change Program. Place orders with Dr. D. Michael Warren, Professor of Anthropology, at (515) 294-0938:

Research Through Biotechnology: Institutional Impacts and Societal Concerns, by Brian Reichel, William Woodman, and Mack Shelley. 1987. 150 pp. \$12. ISBN 0-945271-00-X.

Papers on Agricultural Biotechnology. Edited by S. Gendel, D. Kline, A. Paulsen, D.M. Warren, and W. Woodman. 1988. 160 pp. \$12. ISBN 0-945271-09-3.

The Economics of Biotechnology: The Case of Biofertilizers in South Indian Agriculture, by S.C. Babu, J.A. Hallam, and L.B. Fletcher. 1988. 60 pp. \$6. ISBN 0-945271-10-7.

CALENDAR OF MEETINGS FOR NOVEMBER

Nov. 3-4: National Conference on Biotechnology Ventures. Redwood City, Calif. Contact: Ken Lee at Arthur Young, 660 Hansen Way, Palo Alto, Calif. 94304.

Nov. 10: Meeting of the North Carolina Biotechnology Center's Advisory Committee on Biotechnology in Agriculture; Research Triangle Park, N.C.; from 7 p.m. to 10 p.m. The committee is studying the issue of state regulations for plant biotechnology. The public is welcome to attend and express its views. For more information, call W. Steven Burke at (919) 541-9366.

Nov. 11: USDA's Agricultural Biotechnology Research Advisory Committee's (ABRAC) Confinement Working Group will meet to discuss containment and confinement levels for agricultural research as applied to animals; The Congress Hotel, Plaza Room, 520 South Michigan Ave., Chicago, Ill. 60605, from 1 p.m. to about 5 p.m. The meeting is open to the public. For more information, call Dr. Alvin Young, Executive Secretary, ABRAC, on (202) 447-9165.

Nov. 13-17: Annual Meeting of the American Phytopathological Society in San Diego, Calif. Several sessions focus on biotechnology and risk assessment. For details, call the Society at (612) 454-7250.

Nov. 14-16: Biotech USA: The 5th Annual Industry Conference and Exhibition. San Francisco, Calif. For more information, call 1-800-243-3238, ext. 232.

Nov. 15-16: "NEPA (National Environmental Policy Act) Workshop." Sponsored by the Forest Service's Northeastern and North Central Forest Experiment Stations. Ballston, Va. For more information, call Dr. Robert Lewis, Assistant Director, Planning and Applications, Northeastern Forest Service Experiment Station on (215) 690-3048.

Nov. 16-19: Biotec '88. International Congress and Trade Fair on Biotechnology. Dusseldorf, West Germany. For more information, call 0211-45-60-01.

Dec. 2: USDA's ABRAC Guidelines Working Group will discuss the proposed guidelines for research outside the laboratory. The meeting will be held from 9 a.m. to about 5 p.m. at USDA, 14th and Independence Ave., S.W., Room 104-A, Administration Bldg., Washington, D.C. 20250; it is open to the public. For more information, call Dr. Daniel Jones, Deputy Director, OAB, on (202) 447-9277.

Biotechnology Notes is compiled and written by Marti Asner, a public affairs specialist on assignment to OAB. Suggestions for items to include in future issues are always appreciated and may be sent to: USDA/OAB, 14th and Independence Ave. S.W., Room 321-A, Administration Bldg., Washington, D.C. 20250; or phone (202) 447-9165.

